AMENDMENTS TO THE CLAIMS

The following listing of claims will replace all prior versions and listings of claims in the application.

LISTING OF CLAIMS

1. (Currently Amended) A multi-layer user management method for multicasting proxy, comprising:

dividing a user management for multicasting groups into three layers: management at an interface layer for controlling multicasting characteristics corresponding to interfaces, management at a data link layer for controlling multicasting characteristics corresponding to data links, and management at user layer for controlling multicasting characteristics corresponding to particular users, and at each layer, setting control blocks that ~~are~~ respectively comprise~~comprised of~~ multicasting characteristic data corresponding to said each layer;

establishing a data relationship among the three layers of control blocks; and

managing a user of a~~the multicasting~~ group of the multicasting groups using the data relationship among the three layers of control blocks

wherein said managing the user of the multicasting group is managing joining or leaving the multicasting group of the user; comprising the steps of:

finding a first interface layer control block according to a data structure of an interface of net (IFNET) having received a multicasting packet; then judging multicasting characteristics of the multicasting group which are defined in the found interface layer control block to determine whether to continue successive processing; if so, performing the next steps, otherwise ending;

finding a first data link layer control block according to a data relationship between data link layer control blocks and the first interface layer control block; then judging multicasting characteristics corresponding to data links of the multicasting packet to determine whether to continue successive processing; if so, performing the next step, otherwise ending; and

finding a first user layer control block according to a multicasting group IP and user attributes; then adding, deleting or modifying corresponding user information in the first user layer control block.

2.   (Original) The method of Claim 1, wherein said controlling multicasting characteristics corresponding to interfaces includes: judging whether to allow multicasting applications at an interface, judging whether to allow multicasting applications at a user side or a network side, judging whether to allow tying multicasting resources or multicasting groups, limiting the number of members of a multicasting group or limiting the number of multicasting groups.

3.   (Currently Amended) The method of Claim 1, wherein said controlling multicasting characteristics corresponding to data links is limiting the number of members of a multicasting group when employing a core edge layer network device such as an Edge Service Router (ESR).

4.   (Original) The method of Claim 1, wherein said controlling multicasting characteristics corresponding to data links is forwarding only one multicasting packet for all members of the same multicasting group at the same data link when forwarding data.

5.   (Original) The method of Claim 1, wherein the data relationship is established through a linking-list structure or a relational database structure.

6.   (Original) The method of Claim 1, wherein the data relationship is established through a three-dimensional linking-list data structure which links each control block with linking-lists or arrays; the three dimensions of the three-dimensional linking-list data structure comprise data link including interface, multicasting group and user IP.

7.   (Cancelled)

8.   (Currently Amended) The method of Claim ~~7~~1, further comprising:
    if no proper data link control block is found when finding a <u>first</u>~~certain~~ data link control block, adding a new data link layer control block ~~at the data link~~; and
    establishing <u>a</u>~~the~~ data relationship among interface layer control blocks, user layer control blocks and the new data link layer control block.

9.   (Currently Amended) The method of Claim 1, wherein <u>said </u>managing the user[[s]] of the multicasting group[[s]] is forwarding control, further comprising:
    making data link layer devices attend multicasting management with device cluster control technique.

10. (Currently Amended) The method of Claim 1, wherein said managing thea user of the multicasting group is performing flow charging control to the user of the multicasting group; and

said performing flow charging control to the user of the multicasting group comprises:

recording the flow of multicasting packets having been forwarded with a device forwarding program and charging the user who has when the user receives[[d]] thesaid multicasting packets.

11. (New) The method of Claim 3, wherein the core edge layer network device is an Edge Service Router (ESR).

12. (New) A multi-layer user management method for multicasting proxy, comprising:

dividing a user management for a multicasting group into an interface layer management, a data link layer management, and an user layer management,

controlling multicasting characteristics corresponding to multicast interfaces via the interface layer management,

controlling multicasting characteristics corresponding to data links via the data link layer management, and

controlling multicasting characteristics corresponding to users via the user layer management,

providing a control block that is for and that has multicasting characteristic data corresponding to each of the interface layer management, the data link layer

management, and the user layer management;

establishing a data relationship among the control blocks; and

managing a user of the multicasting group by using the data relationship;

wherein said managing the user of the multicasting group is managing joining or leaving the multicasting group of the user; comprising the steps of:

finding a first interface layer control block according to a data structure of an interface of net (IFNET) having received a multicasting packet; then judging multicasting characteristics of the multicasting group which are defined in the found interface layer control block to determine whether to continue successive processing; if so, performing the next steps, otherwise ending;

finding a first data link layer control block according to a data relationship between data link layer control blocks and the first interface layer control block; then judging multicasting characteristics corresponding to data links of the multicasting packet to determine whether to continue successive processing; if so, performing the next step, otherwise ending; and

finding a first user layer control block according to a multicasting group IP and user attributes; then adding, deleting or modifying corresponding user information in the first user layer control block.